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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/573,937	09/13/2006	Eike Schulz Van Endert	37317-79570	5416

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EXAMINER	
YOUNG, NATASHA E	
ART UNIT	PAPER NUMBER
1797	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

indocket@btlaw.com

Office Action Summary	Application No.	Applicant(s)	
	10/573,937	SCHULZ VAN ENDERT ET AL.	
	Examiner	Art Unit	
	NATASHA YOUNG	1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 November 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Applicant's election of Group I, which is drawn to an apparatus, in the telephone conversation on June 18, 2008 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and In *re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-22 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-20 of U.S. Patent No. 7,259,227 B2 in view of May et al (US 2,761,889). U.S. Patent No. 7,259,227 B2 disclosed the claimed invention with the exception of structure is not arranged as claimed. May et al discloses a cyclone separator (15) above the reaction zone (11) (see figure 1 and column 2, lines 44-57) such that it would have been obvious to one having ordinary skill in the art at the time the invention was made to have in the upper third, the tower reactor is configured in the form of a hydrocyclone with attached heat exchanger and has a supply line for the paste, suspension and/or liquid raw material mixture, the region of the tower reactor below the hydrocyclone is configured in the form of a downflow cascade, the cascade is via a pipe in connection with the lower part of the tower reactor which is configured in the form of a single- or multiple-stage falling-film zone with a preliminary pressure reduction, since it has been held that rearranging parts of an invention involves only routine skill in the art (see MPEP 2144.04 (VI-C)).

Regarding claim 6, US 7,259,227 B2 does not disclose a tower reactor wherein the penultimate cascade has a discharge pipe on which an injection lance for the supply of additives is disposed.

It would have been an obvious matter of design choice to have the penultimate cascade has a discharge pipe on which an injection lance for the supply of additives is disposed, since applicant has not disclosed that the penultimate cascade has a discharge pipe on which an injection lance for the supply of additives is disposed solves any problem or is for any particular purpose and it appears that the invention would perform equally well with the penultimate cascade has a discharge pipe on which an injection lance for the supply of additives is disposed.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-23 and 28-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schulz Van Endert et al (WO 2003/042278, the English Language Equivalent US 7,115,701 B2 will be used as the English translation) in view of May et al (US 2,761,889).

Regarding claims 1, Schulz Van Endert et al discloses a tower reactor comprising reaction zones for simultaneous esterification and/or transesterification and also precondensation (see Abstract; column 1, lines 26-43; and column 4, lines 21-29), the individual reaction zones being connected to each other and combined in the tower reactor, the at least one tower reactor (1) is constructed as follows: in the lower third, the tower reactor is configured in the form of a hydrocyclone (2) with attached heat exchanger (5) and has a supply line (3) for the paste, suspension and/or liquid raw material mixture, the region of the tower reactor above the hydrocyclone is configured in the form of a downflow cascade (7), the cascade is via a pipe in connection with the lower part of the tower reactor which is configured in the form of a single- or multiple-

stage falling-film zone with a preliminary pressure reduction (see column 4, lines 1-41; column 5, line 38 through column 6, line 33; column 7, lines 30-61; and figures 1-2).

Schulz Van Endert et al does not discloses the at least one tower reactor is constructed as follows: in the upper third, the tower reactor is configured in the form of a hydrocyclone with attached heat exchanger and has a supply line for the paste, suspension and/or liquid raw material mixture, the region of the tower reactor below the hydrocyclone is configured in the form of a downflow cascade, the cascade is via a pipe in connection with the lower part of the tower reactor which is configured in the form of a single- or multiple-stage falling-film zone with a preliminary pressure reduction.

May et al discloses a cyclone separator (15) above the reaction zone (11) (see figure 1 and column 2, lines 44-57) such that it would have been obvious to one having ordinary skill in the art at the time the invention was made to have in the upper third, the tower reactor is configured in the form of a hydrocyclone with attached heat exchanger and has a supply line for the paste, suspension and/or liquid raw material mixture, the region of the tower reactor below the hydrocyclone is configured in the form of a downflow cascade, the cascade is via a pipe in connection with the lower part of the tower reactor which is configured in the form of a single- or multiple-stage falling-film zone with a preliminary pressure reduction, since it has been held that rearranging parts of an invention involves only routine skill in the art (see MPEP 2144.04 (VI-C)).

Regarding claim 2, Schulz Van Endert et al discloses the tower reactor wherein the hydrocyclone has a vapor connection piece and is connected to a heat exchanger in

such a manner that the product is directable in the natural or enforced circulation via the heat exchanger into the hydrocyclone (see column 3, lines 5-28).

Regarding claim 3, Schulz Van Endert et al discloses a tower reactor wherein the heat exchanger has a separate gas chimney which leads into an upper part of the cyclone (see column 4, lines 47-49).

Regarding claim 4, Schulz Van Endert et al discloses a tower reactor wherein the cascade has at least two trays (see column 4, lines 50-53).

Regarding claim 5, Schulz Van Endert et al discloses a tower reactor wherein a stirring assembly for mixing additives is in at least one cascade region (see column 6, lines 65-67 and figure 1).

Regarding claim 6, Schulz Van Endert et al does not disclose a tower reactor wherein the penultimate cascade has a discharge pipe on which an injection lance for the supply of additives is disposed.

It would have been an obvious matter of design choice to have the penultimate cascade has a discharge pipe on which an injection lance for the supply of additives is disposed, since applicant has not disclosed that the penultimate cascade has a discharge pipe on which an injection lance for the supply of additives is disposed solves any problem or is for any particular purpose and it appears that the invention would perform equally well with the penultimate cascade has a discharge pipe on which an injection lance for the supply of additives is disposed.

Regarding claim 7, Schulz Van Endert et al discloses a tower reactor wherein the pressure pipe is configured as a double-walled jacket pipe which is continued in the interior of the first top cascade as a heating coil (see column 4, lines 54-58).

Regarding claim 8, Schulz Van Endert et al discloses a tower reactor wherein the pressure pipe is equipped with a volume conveyor and static mixing elements or with a mixing pump (see column 4, lines 54-58).

Regarding claim 9, Schulz Van Endert et al discloses a tower reactor wherein the hydrocyclone has a gas inlet in a conical region thereof (see column 4, lines 59-60).

Regarding claim 10, Schulz Van Endert et al discloses a tower reactor wherein one of the reaction trays in the vapor region has an inert gas inlet (see column 4, lines 61-65).

Regarding claim 11, Schulz Van Endert et al discloses a tower reactor wherein the preliminary pressure reduction zone for the falling-film part has the form of a hydrocyclone (see column 4, line 66 through column 5, line 2).

Regarding claim 12, Schulz Van Endert et al does not disclose a tower reactor wherein the preliminary pressure reduction zone is equipped with at least one further pressure reduction chamber.

In addition Schulz Van Endert et al discloses an initial pressure reduction zone (see column 5, lines 3-7) implying that there may be more than one pressure reduction zone.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the preliminary pressure reduction zone is equipped with at

least one further pressure reduction chamber, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art (see MPEP 2144.04 (VI-B)).

Regarding claim 13, Schulz Van Endert discloses a tower reactor wherein the at least one falling-film zone has a pipe field (see column 5, lines 3-7).

Regarding claim 14, Schulz Van Endert et al discloses wherein an inlet cylinder is assigned to each pipe of the pipe fields and ensures uniform wetting of the insides of the pipes, the pipes being equipped with overlapping, non-axial slots on the circumference, a constant filling level above the series of pipes being producible because of the slot pressure loss, and having a maximum overflow with an indented crown, the slots being configured such that viscosity differences effect no change in the filling level, but a proportional change of filling level to liquid throughput (see column 7, lines 13-44), since the constant filling level series of pipes being producible because of the slot pressure loss in based on the geometry of the inlet cylinders and maximum overflow is interpreted as emergency overflow.

Regarding claim 15, Schulz Van Endert et al discloses a tower reactor wherein the pipe field has channels for distribution of the melt (see column 5, lines 3-7).

Regarding claim 16, Schulz Van Endert et al does not disclose a tower reactor wherein the pipes have a cold-rolled, drawn surface "m" according to EN ISO 1127 with a surface roughness R_a = 0.4 to 0.6 or R_t = 4 to 6 µm.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the pipes have a cold-rolled, drawn surface "m" according

to EN ISO 1127 with a surface roughness R_a = 0.4 to 0.6 or R_t = 4 to 6 µm, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art (see MPEP 2144.05 (II-A)).

Regarding claim 17, Schulz Van Endert et al does not disclose a tower reactor wherein the pipe bases are configured in the form of a cap.

It would have been obvious to one having ordinary skill in the art to have a tower reactor wherein the pipe bases are configured in the form of a cap for increase flow of product and to decrease gathering of product on the periphery where the tower reactor and base plate meet.

Regarding claim 18, Schulz Van Endert et al discloses wherein the length of the pipes of the falling-film zone is dimensioned such and the inner surfaces have such a structure that total wetting is effected as a function of the product viscosity (L:D ≥ 10 ≤ 25) (see column 7, lines 30-40).

Regarding claim 19, Schulz Van Endert et al discloses a tower reactor wherein the diameter of the pipes of the falling-film zone is chosen to be larger than the largest occurring reaction vapor bubble and in that the reaction vapors are directed in parallel flow with the downwardly flowing product (see column 5, lines 21-24).

Regarding claim 20, Schulz Van Endert et al discloses a tower reactor wherein the tower reactor has dipped supply lines for the reaction gases and/or foreign gas from reaction tray to reaction tray for conducting in parallel flow through the reaction liquid in order to produce a pressure incline between each tray (see column 6, lines 25-33).

Regarding claim 21, Schulz Van Endert et al discloses a tower reactor wherein the entire tower reactor is equipped with a jacket for heating with organic heating medium in vapor form (see column 5, lines 27-29).

Regarding claim 22, Schulz Van Endert et al discloses a tower reactor wherein all the heat exchange surfaces in the individual zones are equipped for liquid heat carriers for process-relevant temperature- and heat quantity distribution (see column 5, lines 30-33).

Regarding claim 23, Schulz Van Endert et al does not disclose a tower reactor wherein the tower reactor has a plate base valve with flow-directing formation with which the supply of the raw materials is effected centrally from below.

However, Schulz Van Endert et al discloses the supply of the product from the initial pressure reduction zone to the fallen-film zone is affected by suitable configuration of the discharge therefrom in the concentric outer region of the falling-film zones and the product is distributed uniformly in the pipe field via channels (see column 5, lines 3-7).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have a base plate valve, since it was known in the art that valves may be used to improve the distribution of a fluid (see MPEP 2144.03 (A-E)).

Regarding claim 28, Schulz Van Endert et al discloses a tower reactor wherein the heat exchanger (5) has a heating chamber and product chamber and also at least one separating device for horizontal separation of heating chamber and product chamber (see figures 1-2).

Schulz Van Endert et al does not disclose a tower reactor wherein the heat exchanger has a product chamber where the height of the separating device corresponding at least to the diameter of the heat exchanger pipes and the separated heat exchanger regions having a rotated offset which corresponds at most to the diameter of the heat exchanger pipes.

It would have been an obvious matter of design choice to have the heat exchanger has a product chamber where the height of the separating device corresponding at least to the diameter of the heat exchanger pipes and the separated heat exchanger regions having a rotated offset which corresponds at most to the diameter of the heat exchanger pipes, since the applicant has not disclosed the heat exchanger has a product chamber where the height of the separating device corresponding at least to the diameter of the heat exchanger pipes and the separated heat exchanger regions having a rotated offset which corresponds at most to the diameter of the heat exchanger pipes solves any problem or is for any particular purpose and it appears that the invention would perform equally well with the heat exchanger has a product chamber where the height of the separating device corresponding at least to the diameter of the heat exchanger pipes and the separated heat exchanger regions having a rotated offset which corresponds at most to the diameter of the heat exchanger pipes.

Regarding claim 29, Schulz Van Endert et al does not disclose a tower reactor wherein the individual separated heat exchanger regions have a different pipe division.

It would have been an obvious matter of design choice to have the individual separated heat exchanger regions have a different pipe division, since the applicant has not disclosed the individual separated heat exchanger regions having a different pipe division solves any problem or is for any particular purpose and it appears that the invention would perform equally well with the individual separated heat exchanger regions have a different pipe division.

Regarding claim 30, Schulz Van Endert et al discloses a tower reactor wherein the hydrocyclone includes one or more vapor chambers (see column 5, lines 38-61).

Schulz Van Endert et al does not disclose the vapor chamber(s) is/are coated in an adhesion-reducing manner.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the vapor chamber(s) coated in an adhesion-reducing manner, since it was known in the art that coating a chamber in an adhesion-reducing manner would improve transport through the chamber (see MPEP 2144.03 (A-E)).

Claims 24-27 rejected under 35 U.S.C. 103(a) as being unpatentable over Schulz Van Endert et al (WO 03/042278) and May et al (US 2,761,889) as applied to claim 1 above, and further in view of Davison et al (US 5,469,914).

Regarding claim 24, Schulz Van Endert et al does not disclose a tower reactor wherein the heat exchanger has static mixing elements in order to improve mixing of the raw mixture into the reaction mixture.

Davison et al discloses a plate heat exchanger having stack of plates with spaces between the plates defining passages for hot and cold fluids, the ends of the

plates define inlet and outlet openings for the fluid passages, and the openings are enlarged by bending the ends of one of the two plates for each flow path away from the corresponding end of the other of these plates and welding it to an adjacent plate (see Abstract); and the flow paths are interrupted by the dimples which produce turbulence for greater heat transfer (mixing) (see column 3, lines 43-47) such that the heat exchanger has static mixing elements in order to improve mixing of the raw mixture into the reaction mixture.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of Schulz Van Endert et al with the teachings of Davison et al for the predictable result of improved mixing in the heat exchanger.

Regarding claim 25, Schulz Van Endert et al does not disclose a tower reactor wherein the heat exchanger has a three-dimensional static mixing element for producing diagonal cross-flows with simultaneous axial through-flow.

Davison et al discloses a plate heat exchanger having stack of plates with spaces between the plates defining passages for hot and cold fluids, the ends of the plates define inlet and outlet openings for the fluid passages, and the openings are enlarged by bending the ends of one of the twp plates for each flow path away from the corresponding end of the other of these plates and welding it to an adjacent plate (see Abstract); and the fluid in the passages between plates follows crossing, concurrent diagonal flow paths and the flow paths are interrupted by the dimples which produce turbulence for greater heat transfer (mixing) (see column 3, lines 43-47) such that the

heat exchanger has a three-dimensional static mixing element for producing diagonal cross-flows with simultaneous axial through-flow.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of Schulz Van Endert et al with the teachings of Davison et al for the predictable result of improved mixing in the heat exchanger and to maximize heat transfer contact area with the plate (see Davison et al column 3, lines 43-47).

Regarding claim 26, Schulz Van Endert et al does not disclose a tower reactor wherein the three-dimensional static mixing element has cross-wise and diagonally configured sheet metal sections with carrier and retaining frames in the flow direction.

Davison et al discloses a plate heat exchanger having stack of plates with spaces between the plates defining passages for hot and cold fluids, the ends of the plates define inlet and outlet openings for the fluid passages, and the openings are enlarged by bending the ends of one of the twp plates for each flow path away from the corresponding end of the other of these plates and welding it to an adjacent plate (see Abstract); the plate pack is tightened to the final dimension so that metal-to-metal-contact occurs between adjacent dimpled plates and panels (see column 3, lines 2-7); and the fluid in the passages between plates follows crossing, concurrent diagonal flow paths and the flow paths are interrupted by the dimples which produce turbulence for greater heat transfer (mixing) (see column 3, lines 43-47) such that the three-dimensional static mixing element has cross-wise and diagonally configured sheet metal sections with carrier and retaining frames in the flow direction.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of Schulz Van Endert et al with the teachings of Davison et al for the predictable result of improved mixing in the heat exchanger and to maximize heat transfer contact area with the plate (see Davison et al column 3, lines 43-47).

Regarding claim 27, Schulz Van Endert et al does not disclose a tower reactor wherein the sheet metal sections are at least one of perforated, undulating, folded and pleated.

Davison et al discloses a plate heat exchanger having stack of plates with spaces between the plates defining passages for hot and cold fluids, the ends of the plates define inlet and outlet openings for the fluid passages, and the openings are enlarged by bending the ends of one of the two plates for each flow path away from the corresponding end of the other of these plates and welding it to an adjacent plate (see Abstract); the plate pack is tightened to the final dimension so that metal-to-metal-contact occurs between adjacent dimpled plates and panels (see column 3, lines 2-7); the plates are bent (folded) (see column 3, lines 31-42 and figure 2); and the fluid in the passages between plates follows crossing, concurrent diagonal flow paths and the flow paths are interrupted by the dimples which produce turbulence for greater heat transfer (mixing) (see column 3, lines 43-47) such that the sheet metal sections are at least one of perforated, undulating, folded and pleated.

It would have been an obvious matter of design choice to have the sheet metal sections are at least one of perforated, undulating, folded and pleated, since the

applicant has not disclosed the sheet metal sections are at least one of perforated, undulating, folded and pleated solves any problem or is for any particular purpose and it appears that the invention would perform equally well with the sheet metal sections are at least one of perforated, undulating, folded and pleated.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of Schulz Van Endert et al with the teachings of Davison et al for the predictable result of improved mixing in the heat exchanger and to maximize heat transfer contact area with the plate (see Davison et al column 3, lines 43-47).

Response to Arguments

Applicant's arguments, see Remarks, page 7, filed November 3, 2008, with respect to U.S.C. 112 rejection of claim 30 have been fully considered and are persuasive. The U.S.C. 112 rejection of claim 30 has been withdrawn.

Applicant's arguments, see Remarks, with respect to the rejection(s) of claim(s) 1-22 under U.S.C. 102(b) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of May et al (US 2,761,889).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NATASHA YOUNG whose telephone number is 571-270-3163. The examiner can normally be reached on Mon-Thurs 7:30 am-6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Walter Griffin can be reached on 571-272-1447. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/N. Y./
Examiner, Art Unit 1797

/Walter D. Griffin/
Supervisory Patent Examiner, Art Unit 1797